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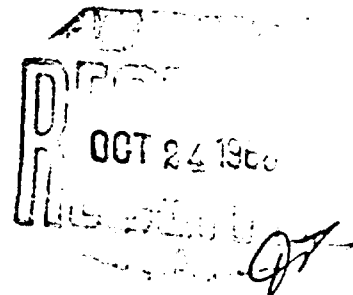
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DEPARTMENT OF THE ARMY
Fort Detrick
Frederick, Maryland

#19

The capacity of prevention, with respect to the tetanus antitoxin, acquired by the rabbit when treated with horse serum; passive transmission in the guinea pig.

E. Falchetti

Some previous studies have shown us that the tetanus antitoxin of equine origin when injected into rabbits treated previously with many injections of horse serum, disappeared very rapidly from the blood circulation/ when it was introduced intravenously, and failed to appear when injected by the subcutaneous or intraperitoneal methods.

It has been possible for us to transmit passively to nine rabbits this property acquired by rabbits hyperimmunized with respect to horse serum, and to demonstrate therefore the importance of antibodies (antihorse) circulation, in the mechanism of the rapid disappearance of the antitoxin at the time of the reinjections.

With the object of establishing a technique which would permit the easy evaluation of the properties of the serums of different species for hindering the immunization action of the antitetanus serum, we have proposed the injection of different doses of these serums into the guinea pig and then, 24 hours later, introducing into those same animals the antitoxic serum and finally to test them with a fixed dose of tetanus toxin.

In one of our studies we therefore injected into the peritoneum of six guinea pigs 3 cc of normal rabbit serum which ~~was~~ was treated six times with normal horse serum; six guinea pigs received under the same conditions 3 cc of normal rabbit serum; 24 hours later, we injected subcutaneously into the abdomen of those 12 guinea pigs and six additional guinea pigs 8 international units of antitetanus serum from a horse; 24 hours later all of the guinea pigs received in the muscles of a hind leg 5 d.m.m. of tetanus toxin.

We verified therefore as the results summarized in table 1 show, that all the guinea pigs injected previously with the antihorse serum of the rabbit, died without benefiting in any way from the protective action of the antitoxic serum of the horse while the control guinea pigs which received the normal rabbit serum or just the antitoxic serum by itself, have resisted the injection of toxin showing only a local an transient tetanus.

Two other guinea pigs which received 5 cc of antihorse serum from a rabbit intraperitoneally and 24 hours later 2 international units did not resist the injection of 2 d.m.m. of toxin and died in the same time as the control guinea pigs which had received only the tetanus toxin.

In another of our studies, we have injected into the peritoneum of several guinea pigs of 350 grams, 3 cc, 2cc and 1 cc respectively of serum from a rabbit treated previously with five injection of horse serum; 24 hours later subcutaneously in the abdomen we injected 2.2 international units (less than 1 cc.) of antitetanus serum from a horse and then, 20 minutes after this last injection, each guinea pig received in the muscles of the foot 2 d.m.m. of tetanus toxin. The results are summarized in table 2. The results summarized in table 2 show that all the guinea pigs which had received previously the antihorse serum ~~1/4~~ died in a time much shorter than the control guinea pigs and those that received the stronger dose of antihorse serum died all the more rapidly.

Therefore we believe that we are able to conclude that it is possible to transmit passively to the guinea pig the property, acquired in the animals of another species, of rendering ineffective in them, the immunisation reaction of the tetanus antitoxin from the horse.

These results on the one hand confirm the role of antibodies (horse antiserum) in circulation in the rapid disappearance of the tetanus antitoxin of equine origin at the time of reinjections, and on the other hand they give us the means of disclosing the existence of these antibodies or of determining the quantitative value in employing the guinea pig as a test animal.

(two tables accompanied the text)

*Trans. fr. the French
by Robine*